

Response under 37 CFR 1.116
Eiji SATAKE et al.

U.S. Patent Application Serial No. 09/895,331
Attorney Docket No. 010860

REMARKS

Claims 1-3 and 5-6 are pending in this application, with claims 5 and 6 currently withdrawn from consideration. Amendments have been proposed herein canceling Claim 4 and amending claim 1.

Claim 1 has been amended to recite that “said water-borne polyurethane resin (A) has a softening temperature of less than 50 °C and a viscosity of the melt at 50 °C of less than 10^5 Pa · s”. This recitation is supported by the specification on page 4, lines 18-20.

Claim 4 has been amended to recite that the “thickener (C) is a surface active agent in the system of an association-type polymer”. This recitation is supported by the specification on page 15, lines 13-14.

Claims 1-3 are rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Voss (U.S. Patent No. 5,861,470) and Rolando (U.S. Patent No. 5,494,960) (Office action paragraphs 3-4).

Reconsideration of the rejection is respectfully requested in view of the proposed amendments to claim 1. Applicants note the following distinctions between Voss and Rolando and the present claims.

(1) Voss discloses two component water based laminating adhesives comprising aqueous polyurethane dispersions and water dispersible polyisocyanate based on isocyanates of hexamethylene diisocynate (b). The average (median) particle size of the aqueous polyurethane dispersion type adhesive is 40-80 nm.

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The present invention differs from the prior art reference by Voss, because Voss is silent to use, as an essential component of the adhesive, an association-type thickener, which is recited in the proposed amendment to claim 1. The Examiner had noted this distinction in paragraph no. 7 of the Office action of October 9, 2002.

In addition, Voss does not disclose the recited characteristic of the present invention that the softening temperature of the water borne polyurethane resin has a softening temperature of equal to or less than 50°C, as shown on page 4, line 20, in the specification.

(2) Rolando discloses aqueous polyurethane dispersions used in adhesives for manufacturing laminate structures. Rolando describes in column 8, line 36, that the adhesives used therein are used for multilayer laminated plastic or plastic/metal foils.

The characteristic features of the Rolando's adhesives are that (1) the adhesive includes as an essential constituent an aliphatic polyfunctional hindered isocyanate, and (3) to use tertiary amine in order to cover low reaction speed of the reaction between the hindered isocyanate (such as TMXDI, IPDI) and polyols.

However, Rolando does not disclose that the adhesive contains, as an essential component, an association-type thickener, which is an essential constituent of the present invention. The Examiner had noted this distinction in paragraph no. 7 of the Office action of October 9, 2002. Furthermore, Rolando does not disclose that the softening temperature of the aqueous polyurethane resin (A) is equal to or less than 50°C.

Rolando states in column 9, lines 28 to 37, that "After the adhesive dispersion has been applied to the first substrate, it is preferably dried to form an adhesive film on the surface of the

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substrate". The drying condition was in a temperature range of 50° to 85°C.

It would not appear to be possible that the film formed on the substrate surface is softened in the above-described drying conditions of 50 to 85°C, since the film is in a solid phase in the drying temperature range.

Therefore, it is clear that the polyurethane resin of the present invention differs from the polyurethane resin by Rolando, because the polyurethane resin of the present invention has a softening temperature different from that of the Rolando's polyurethane resin. Furthermore, the film laminating performance (corresponding to the peel strength) of Rolando's adhesive on polyester (in column 12, the first table) was 500 g/in, which is considerably lower than that of the adhesive according to the present invention, which is in a level of 3 kg/cm.

The adhesive of the present invention is used for forming artificial leather, which requires high laminating performance in contrast to the adhesive by Rolando, which is, as recited in column 8, lines 30-35, used for snack food packages, which may require relatively low peel strength for peelable bond facilities of the package. The high peel strength of the adhesive according to the present invention distinguishes the present adhesive from the adhesive by Rolando having a relatively low peel strength.

Applicants therefore submit that claims 1-3 are novel and non-obvious over Voss '470 and Rolando '960, taken separately or in combination.

Claims 4 and 5 are rejected under 35 U.S.C. §103(a) as being unpatentable over Voss and Rolando in view of Itabashi (U.S. Patent No. 5,854,323) and Emmons (U.S. Patent No.

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4,155,892) (Office action paragraphs 5-6).

Reconsideration of the rejection is respectfully requested in view of the proposed amendments to the claims.

Applicants have remarked above regarding the distinction of claim 1 from the combination of Voss and Rolando. In particular, the proposed amendment to claim 1 recites that "said water-borne polyurethane resin (A) has a softening temperature of less than 50 °C and a viscosity of the melt at 50 °C of less than 10⁵ Pa ·s". There is no teaching or suggestion for this limitation in Voss and Rolando.

Itabashi discloses an aqueous type pigment dispersing agent and Emmons discloses a association-type thickener. However, these references do not disclose any other requirements of the aqueous dry laminate adhesive claimed in claim 1 of the present invention. Therefore, there is no reasonable ground to combine Itabashi and Emmons with Voss and Rolando. In particular, there is no suggestion in Itabashi and Emmons for the recited limitation on softening temperature and viscosity of the melt.

Applicants therefore submit that claim 5 is novel and non-obvious over Voss, Rolando, Itabashi and Emmons, taken separately or in combination. The Applicants, therefore, respectfully request that the Examiner reconsider the rejections and allow the present application.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

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In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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